Treating Vascular Disease, Injury, and Inflammation

Ref. No. E-165-2011

Keywords: Therapeutic, inflammation, atherosclerosis, restenosis, pattern recognition receptor , PRR, Soluble Receptor for Advanced Glycation Endproducts, sRAGE

Summary:
The Laboratory of Cardiovascular Sciences of the National Institute on Aging, is seeking parties interested in collaborative research to co-develop a cell surface protein observed to reduce inflammation and related injuries.

The receptor for advanced glycation end products (RAGE) is a cell surface protein that triggers signaling pathways leading to inflammation. While acute inflammation serves to resolve pathogen infection and stresses, which promote tissue repair, persistent inflammation results in maladaptive tissue remodeling and damage. RAGE stimulated signaling and inflammation has been implicated in multiple detrimental human illnesses including diabetes, atherosclerosis, restenosis, arthritis, and Alzheimer's disease.

The soluble version of RAGE (sRAGE) binds the same target molecules (advanced glycation end products), but cannot activate inflammatory signaling pathways. For this reason, sRAGE is thought to act as a decoy for RAGE. sRAGE reduces inflammation and pathogenic consequences associated with RAGE signaling. The administration of sRAGE has been used to treat atherosclerosis and arterial restenosis in animal models. The inventors established a way to produce human sRAGE with more than 1000-fold greater potency than current methods. Production of full length human sRAGE in cultured mammalian cells enables addition of mammalian post-translational modifications that dramatically enhance potency. This invention covers methods of production, the resulting modified sRAGE molecules, and methods of using this highly potent sRAGE for treating adverse vascular conditions.

Potential Commercial Applications:

- Atherosclerosis therapeutics
- Prevention of vascular inflammation
- Treating vascular injuries due to angioplasty or traumatic injury
- Treating vascular complications of Diabetes mellitus
- Alzheimer’s Disease treatment based on amyloid-beta protein binding

Competitive Advantages:

- Greater than 1000-fold increased potency over sRAGE produced in insect cells
- Readily scalable production as a recombinant protein secreted from CHO cells
- Simple affinity purification method

Development Stage: Pre-clinical, *in vivo* and *in vitro* data available

Patent Status: US provisional application 61/582,574 filed 03 Jan. 2012.

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Last updated: 02/21/2012